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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,918	01/30/2004	Thomas Patrick Nolan	146712003900	3978

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,918

Applicant(s)

NOLAN, THOMAS PATRICK

Examiner

Kevin M. Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/30/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Examiner's Comments

1. The Examiner wishes to point out that the limitations of claims 8 and 9 are *not* necessarily required in the prior art. I.e. claims 8 and 9 encompass all the limitations of claim 7 (from which they depend), including the choice of either particles or a co-continuous region. If the prior art is a co-continuous region or is taught to either be co-continuous or particulate, the limitations of claims 8 and 9 are rendered moot. Applicant is suggested to consider rewording claims 8 and 9 to positively recite "wherein the portion is a discrete particulate region and further wherein ...".

Election/Restrictions

2. Applicant's election without traverse of Group I, claims 1 – 10, in the paper filed December 28, 2005 is acknowledged. Claims 11 – 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. The requirement is still deemed proper and is therefore made FINAL.

Specification

3. The disclosure is objected to because of the following informalities: Paragraph 0001 needs to have the priority data updated. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 2 and 4 - 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "substantially none" in claim 1 is a relative term which renders the claim indefinite. The term "substantially none" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In the Examiner's opinion, one of ordinary skill in the art would typically afford the term "substantially none" a fairly small range above 0% (e.g. maybe 1% or 2% maximum), yet it is clear from applicant's claim 3 that at least 5% is deemed to be encompassed by "substantially none", and perhaps even larger values. The Examiner deems that "substantially none" and "less than 5 atomic percent" are incompatible in the field of endeavor where even a small percentage variation can impact the performance of a recording medium. As such, for the purpose of evaluating the prior art, the Examiner is interpreting claim 1 as requiring "less than 5 atomic percent" of the at least one or more components in the portion (b).

The term "substantially no" in claim 8 is a relative term which renders the claim indefinite. The term "substantially no" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in

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the art would not be reasonably apprised of the scope of the invention. Given the inconsistency with the term "substantially none" described above and the lack of a detailed description of what is meant by "substantially no magnetic exchange coupling", the Examiner feels that the record must be clarified as to what scope applicant feels is covered by the term "substantially no magnetic exchange coupling". For the purpose of evaluating the prior art, the Examiner has taken that any granular-type recording layer wherein the crystal grains are physically separated from each other (i.e. no direct crystal grain-to-crystal grain contact) would meet the limitation of "substantially no magnetic exchange coupling".

Regarding claim 10, the Examiner is incapable of determining the scope of claim 10 since it appears that applicant is claiming a difference between a layer and itself, which is clearly impossible. I.e. "a difference in M_s of the first magnetic layer and of another layer", but the claim then recites that "the another layer *is the first magnetic layer*" (emphasis added). It is unclear whether applicant is attempting to say that the second magnetic layer (from claim 2) is the "another layer", that there is yet another magnetic layer (a third magnetic layer?), or whether the "another layer" is a separate portion of the first magnetic layer. Applicant is suggested to reword and clarify the intended scope of claim 10. Since the Examiner is unable to ascertain the scope of the claim, no prior art has been applied to claim 10 at this time.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2 and 5 – 9 are rejected under 35 U.S.C. 102(a), (b) and/or (e) as being anticipated by Kikitsu et al. (U.S. Patent No. 5,652,054).

Regarding claim 1, Kikitsu et al. ('054) disclose a magnetic recording medium (*Title*) comprising a substrate and a first magnetic layer, wherein the first magnetic layer comprises (a) a continuous matrix comprising at least one or more components (*Figures 1 – 4 and col. 4, line 41 bridging col. 5, line 46*) and (b) a portion that is different from the matrix (*ibid – ferromagnetic crystal grains*), the matrix comprises a non-ferromagnetic material that is non-ferromagnetic in a bulk state (*col. 5, lines 22 – 46*), and the portion comprises a ferromagnetic material (*col. 4, lines 53 – 64*) and comprises substantially none of at least one of the at least one or more components (*Figures 1 – 4 and 8; col. 5, line 58 bridging col. 6, line 6; and col. 11, line 51 bridging col. 12, line 6*).

Regarding claim 2, Kikitsu et al. ('054) disclose a second magnetic layer meeting applicant's claimed structural limitations (*col. 6, lines 36 – 64*).

Regarding the limitations of claims 5 and 6, it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, the Examiner deems that there is sound basis that at least some, if not all, the embodiments disclosed by Kikitsu et al. ('054) will inherently meet the claimed property limitations given their use of a high Ku, high Hc (see *also col. 15, lines 26 – 38*) material for the magnetic particles in these embodiments. The Examiner especially notes embodiment 10, which has a gradient in the amount of non-magnetic material for the matrix in the thickness direction. Such a gradient necessarily results in what can be considered distinct magnetic layers (since each "layer" will have unique properties because of the unique composition).

Regarding claim 7, Kikitsu et al. ('054) disclose portions meeting applicant's claimed limitations (*Figures 1 – 4 and col. 4, line 41 bridging col. 5, line 46*).

Regarding claim 8, Kikitsu et al. ('054) disclose no exchange coupling between the particles (*col. 6, lines 18 – 24*).

Regarding claim 9, Kikitsu et al. ('054) disclose particle sizes meeting applicant's claimed limitations (*col. 16, line 28 bridging col. 17, line 20*).

8. Claims 1, 2 and 7 – 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Kikitsu et al. (U.S. Patent No. 6,602,620 B1).

Regarding claim 1, Kikitsu et al. ('620 B1) disclose a magnetic recording medium (*Title*) comprising a substrate and a first magnetic layer, wherein the first magnetic layer comprises (a) a continuous matrix comprising at least one or more components (*Figure 4 and col. 9, lines 23 - 36*) and (b) a portion that is different from the matrix (*ibid – ferromagnetic crystal grains*), the matrix comprises a non-ferromagnetic material that is non-ferromagnetic in a bulk state (*col. 10, lines 5 – 23*), and the portion comprises a ferromagnetic material (*col. 9, line 46 bridging col. 10, line 4*) and comprises substantially none of at least one of the at least one or more components (*Figure 4 and examples, wherein the matrix is formed with pores and the magnetic material is only deposited into the pores*).

Regarding claim 2, Kikitsu et al. ('620 B1) disclose a second magnetic layer meeting applicant's claimed structural limitations (*col. 13, lines 43 - 51*).

Regarding claim 7, Kikitsu et al. (620 B1) disclose portions meeting applicant's claimed limitations (*Figure 4*).

Regarding claim 8, Kikitsu et al. (620 B1) disclose no exchange coupling between the particles (*col. 11, lines 37 – 51*).

Regarding claim 9, Kikitsu et al. ('620 B1) disclose particle sizes meeting applicant's claimed limitations (*Table 1 and Examples*).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. ('054) as applied above, and further in view of Takizawa et al. (U.S. Patent App. No. 2002/0095767 A1).

Kikitsu et al. ('054) is relied upon as described above.

Kikitsu et al. ('054) fail to disclose a matrix and portion comprising Cr, though Kikitsu et al. ('054) does teach that the amount of non-magnetic material in the grain versus the amount in the grain boundary is preferably as low as 1% or less (*Figures 1 – 4 and 8; col. 5, line 58 bridging col. 6, line 6; and col. 11, line 51 bridging col. 12, line 6*).

However, the Examiner deems that oxides of silicon and oxides of chromium are known equivalents in the field of non-magnetic matrix material useful for segregating

magnetic grains in a granular-type magnetic recording medium, as taught by Takizawa et al. (*Paragraphs 0042 and 0058 – 0060*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, oxides of silicon and oxides of chromium are equivalents in the field of non-magnetic matrix material useful for segregating magnetic grains in a granular-type magnetic recording medium. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

11. Claims 2, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. ('054) as applied above, and further in view of Fullerton et al. (U.S. Patent No. 6,440,589 B1).

Kikitsu et al. ('054) is relied upon as described above.

While the Examiner maintains that at least some, if not all, the embodiments of Kikitsu et al. ('054) will inherently possess the claimed property limitations, the Examiner acknowledges that Kikitsu et al. ('054) fail to explicitly disclose a value of the M_s or a difference in the M_s values between multiple magnetic layers.

However, Fullerton et al. teach that a magnetic recording medium possessing a lower/host (i.e. applicant's "second") ferromagnetic layer having a M_s value and an upper granular magnetic layer (i.e. applicant's "first magnetic layer") meeting applicant's claimed M_s range and having a M_s that is at least 1.5 times greater than the M_s of the lower layer results in a recording medium possessing improved thermal stability (*Title*;

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Abstract; and col. 2, line 45 bridging col. 3, line 58 – which the Examiner notes would lead to a difference of at least 200 emu/cc for recording layers possessing a Ms of >400 emu/cc)

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. ('054) to utilize first and second magnetic layers meeting applicant's claimed property limitations as taught by Fullerton et al., since such a structure results in a recording medium possessing improved thermal stability.

12. Claims 2, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. ('620 B1) as applied above, and further in view of Fullerton et al. ('589 B1).

Kikitsu et al. ('620 B1) is relied upon as described above.

Kikitsu et al. ('620 B1) fail to explicitly disclose a value of the Ms or a difference in the Ms values between multiple magnetic layers.

However, Fullerton et al. teach that a magnetic recording medium possessing a lower/host (i.e. applicant's "second") ferromagnetic layer having a Ms value and an upper granular magnetic layer (i.e. applicant's "first magnetic layer") meeting applicant's claimed Ms range and having a Ms that is at least 1.5 times greater than the Ms of the lower layer results in a recording medium possessing improved thermal stability (*Title; Abstract; and col. 2, line 45 bridging col. 3, line 58 – which the Examiner notes would*

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lead to a difference of at least 200 emu/cc for recording layers possessing a Ms of >400 emu/cc)

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. ('620 B1) to utilize first and second magnetic layers meeting applicant's claimed property limitations as taught by Fullerton et al., since such a structure results in a recording medium possessing improved thermal stability.

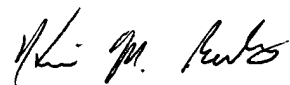
Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
March 16, 2006


Kevin M. Bernatz, PhD
Primary Examiner